

We Claim:

1 1. A method of quantizing digital video information, said method
2 comprising:
3 determining a buffer occupancy accumulator as a difference between an actual
4 amount of bits used and a requested amount of bits; and
5 limiting an amount of change in said buffer occupancy accumulator based upon
6 frame properties.

1 2. The method of scaling digital video information as claimed in
2 claim 1 wherein said frame properties comprise a frame type.

1 3. The method of scaling digital video information as claimed in
2 claim 1 wherein said limiting an amount of change in said buffer occupancy accumulator
3 is performed by clipping said buffer occupancy accumulator.

1 4. The method of scaling digital video information as claimed in
2 claim 1 wherein said limiting an amount of change in said buffer occupancy accumulator
3 is performed by scaling said buffer occupancy accumulator.

1 5. A method of quantizing digital video information, said method
2 comprising:
3 determining a base quantizer value; and
4 determining a quantizer adjustment based upon frame properties.

1 6. The method of scaling digital video information as claimed in
2 claim 5 wherein said frame properties comprise a frame type.

1 7. The method of scaling digital video information as claimed in
2 claim 5 wherein said quantizer adjustment is further based upon a macroblock position.

1 8. The method of scaling digital video information as claimed in
2 claim 5 wherein said quantizer adjustment is further based bits per pixel of a current
3 frame.

1 9. The method of scaling digital video information as claimed in
2 claim 5 wherein said quantizer adjustment is further based on a difference between a
3 number of bits actually used and a number of bits that should have been used.

1 10. The method of scaling digital video information as claimed in
2 claim 9 wherein said number of bits that should have been used is calculated in a manner
3 that takes into account macroblock types.

1 11. The method of scaling digital video information as claimed in
2 claim 5 wherein said quantizer adjustment is further based on a Normalized Sum of
3 Absolute Differences (NSAD).

1 12. The method of scaling digital video information as claimed in
2 claim 5 wherein said quantizer adjustment is further based on a macroblock activity
3 measure normalization (mbactN).

1 13. The method of scaling digital video information as claimed in
2 claim 5 wherein determining a base quantizer value comprises clipping said base
3 quantizer value to produce an adaptively determined finite range.

1 14. A method of determining a quantizer for quantizing digital video
2 information, said method comprising:
3 a delta value, said delta value comprising a difference between a number of bits
4 actually used and a number of bits that should have been used.
5 wherein said number of bits that should have been used is dependent upon a frame type.

1 15. The method of determining a quantizer as claimed in claim 14
2 wherein said number of bits that should have been used comprises using different
3 calculations for Intra-macroblocks and Inter-macroblocks.

1 16. A computer readable medium, said computer readable medium
2 comprising a set of computer instructions for performing the steps of:
3 determining a buffer occupancy accumulator as a difference between an actual
4 amount of bits used and a requested amount of bits; and
5 limiting an amount of change in said buffer occupancy accumulator based upon
6 frame properties.

1 17. The computer readable medium as claimed in claim 16 said frame
2 properties comprise a frame type.

1 18. The computer readable medium as claimed in claim 16 wherein
2 said limiting an amount of change in said buffer occupancy accumulator is performed by
3 clipping said buffer occupancy accumulator.

1 19. The computer readable medium as claimed in claim 16 wherein
2 said limiting an amount of change in said buffer occupancy accumulator is performed by
3 scaling said buffer occupancy accumulator.

1 20. A computer readable medium, said computer readable medium
2 comprising a set of computer instructions for implementing a video encoder by
3 performing the steps of:
4 determining a base quantizer value; and
5 determining a quantizer adjustment based upon frame properties.

1 21. The computer readable medium as claimed in claim 20 wherein
2 said frame properties comprise a frame type.

1 22. The computer readable medium as claimed in claim 20 wherein
2 said quantizer adjustment is further based upon a macroblock position.

1 23. The computer readable medium as claimed in claim 20 wherein
2 said quantizer adjustment is further based bits per pixel of a current frame.

1 24. The computer readable medium as claimed in claim 20 wherein
2 said quantizer adjustment is further based on scaling factor multiplied by a difference
3 between a number of bits actually used and a number of bits that should have been used.

1 25. The computer readable medium as claimed in claim 24 wherein
2 said number of bits that should have been used is calculated in a manner that takes into
3 account macroblock types.

1 26. The computer readable medium as claimed in claim 20 wherein
2 said quantizer adjustment is further based on a Normalized Sum of Absolute Differences
3 (NSAD).

1 27. The computer readable medium as claimed in claim 20 wherein
2 said quantizer adjustment is further based on a macroblock activity measure
3 normalization (mbactN).

1 28. The computer readable medium as claimed in claim 20 wherein
2 determining a base quantizer value comprises clipping said base quantizer value to
3 produce an adaptively determined finite range.